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AUTHOR Morine, Greta
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ABSTRACT

This paper approaches the task of defining basic teaching skills by identifying essential preactive skills. Piaget's model of cognitive development was used to determine the general goal of teacher training in preactive skills, to identify the three basic kinds of preactive skills necessary for teachers to learn, and to suggest the kinds of instructional processes to achieve the goal of changing the cognitive functioning of teachers so that they begin to move from the concrete operational level of development toward the formal operational level in their preactive teaching behavior. The three basic kinds of preactive skills identified were generating alternatives, selecting among alternatives, and altering existing circumstances. Specific behavioral objectives subsumed to each of these skills are presented. The instructional processes suggested to achieve these goals capitalize on the developmental processes of socialization and equilibration. The types of training materials to be developed to implement these processes provide background information on new instructional alternatives, simulated data on the given affecting instructional decision making, and peer interaction regarding contradictory instructional decisions. (PD)

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BASIC TEACHING SKILLS: IDENTIFICATION OF PREACTIVE SKILLS

Greta Morine

EMPORIA KANSAS STATE COLLEGE
TEACHER C...
RESOURCE CENTER
ITEM NO 672
FOR INSPECTION ONLY

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The Developmental Approach

The preactive behavior of the teacher has been perceived as basically a rational, problem-solving kind of behavior ever since Philip Jackson coined the term in Life in Classrooms. It would be a relatively simple task to identify the skills required in any type of logical problem solving (e.g., hypothesis-formation and hypothesis testing) and to apply these to the particular kinds of problems that teachers deal with.

The difficulty with this approach is that teachers don't really solve problems by forming hypotheses and testing them. In fact, much of the planning that teachers do is never perceived by them as a "problem" to be solved at all. It is simply a routine activity.

There is a wide gap between the highly rational, logical behavior envisioned by educational theorists as the epitome of effective educational planning and the kind of routine management behavior that teachers actually engage in when they are planning lessons. It is a gap that is not easily bridged. The developmental approach to teacher education would suggest that teacher training should not attempt to bridge the gap completely during a brief period, such as a year of pre-service work. What is needed is the beginning of a solid structure (bridge) that the teacher can continue to construct independently when his training has ended (either temporarily or permanently).

The eventual goal of teacher training, viewed from the developmental perspective, is to change the cognitive functioning of teachers so that their preactive behavior more closely approaches a logical model. To relate this goal to Piaget's theory of cognitive development, it could be viewed as an attempt to train teachers to operate at the formal level of cognition in their preactive

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teaching. The present state of affairs with most in-service and pre-service teachers is that they are operating at the concrete level in their daily planning of instruction. The task is to bring to bear developmental processes that will move teachers away from functioning at the concrete level and toward functioning at the formal level.

The developmental processes which could be brought to bear are the processes of socialization and equilibration. Socialization, according to Piaget, involves an increasing awareness of the perceptions of reality held by other people. This awareness results from exposure to perceptions that differ from one's own. Equilibration involves a series of adjustments between the cognitive structures of the individual and the reality that surrounds him. These adjustments occur as a result of perceived discrepancies between cognitive structures and reality.

The crucial element in applying developmental processes, then, would be to create cognitive dissonance. The teacher would be asked to state a perception, an analysis, or a solution for a particular problem. He would then be presented with data that conflicted in some way with the position he had taken. This conflict could cause him to reexamine his perceptions of the problem and adapt his thinking somehow to the newly perceived problem. A continuing process of adaptation and readaptation would operate to change the cognitive structure of the individual so that he began to move toward the level of formal thought.

The basic cognitive skills that might characterize the individual in a transitional stage of development between concrete and formal operations are identified for the purposes of this paper as: 1) skills in generating alternatives; 2) skills in selecting among alternatives; 3) skills in altering existing alternatives. The critical nature of these skills in terms of the developmental process will be explained, and further specification of skills will be attempted in the section which follows.

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Identification of Skills

The three basic proactive teaching skills to be discussed here [illegible] alternatives, selecting among alternatives, and altering existing alternatives] were identified by noting differences between the behavioral characteristics of individuals at the formal stage of operations and those at the concrete stage of operations. The three skills selected are behaviors related to logical problem-solving and are transitional behaviors that would bridge the two stages of cognitive functioning.

Generating Alternatives

The most salient characteristic of the individual at the formal operations stage of cognitive development is that he is able to generate alternatives. Not just a limited number of alternatives, but all the logical possibilities, including those which were impossible on the basis of his own experience with reality.

The individual who is at the cognitive level of concrete operations can hypothesize, but he tends to treat the hypothesis as a fact, rather than as an idea to be tested. At this developmental stage he can also handle "if ... then ..." propositions, when the antecedent phrase is true or is something which he has experienced. He has difficulty with this form of logic when the antecedent phrase is false, or is something outside his own realm of experience.

As an individual moves from the stage of concrete operations into the stage of formal operations, his thinking will be characterized by the ability to generate larger numbers of alternatives and to deal with the probable consequences of both the possible and the impossible "if..."

To facilitate the individual's development in this direction he must first be provided with an important base of knowledge and experience, so that there are alternative possibilities known visible to him. He must next be aware [illegible] a behavior pattern of developing the one best [illegible] solution to a problem, toward a behavior pattern of producing several possible

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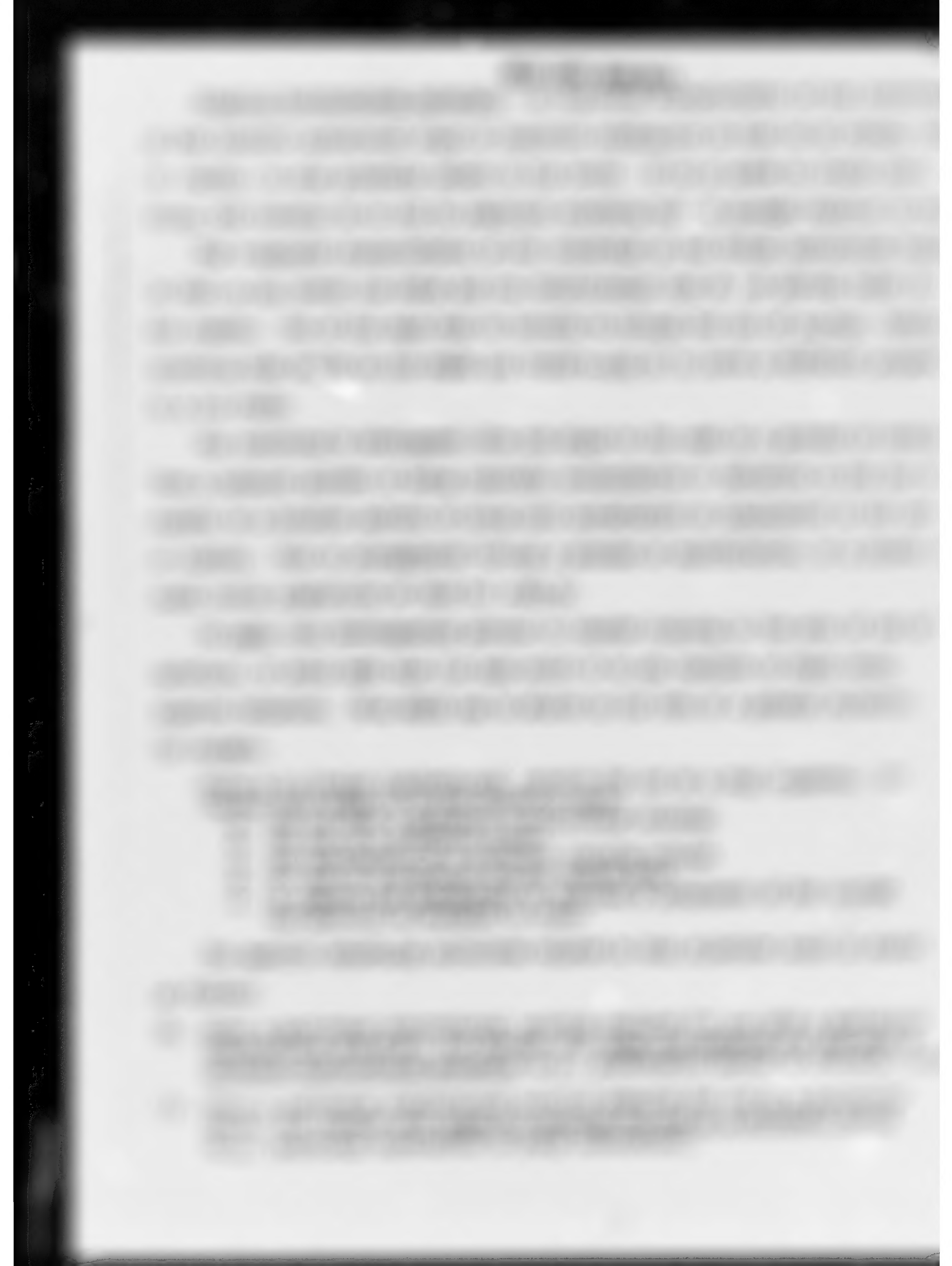

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23. Given a particular instructional material designed for achievement of a particular learning outcome, the teacher will adapt the material for achievement of a different learning outcome (e.g., cognitive objective to affective objective).

24. Given a particular instructional material designed for use in a particular subject matter area, the teacher will adapt the material for use in a different subject matter area (e.g., social studies to language arts).

25. Given a particular instructional material inadequately designed for attainment of a particular concept by a particular group of children or an individual child, the teacher will adapt the material to improve the probability of concept attainment (e.g., add more examples or data to increase speed of concept attainment).

Summary

When teacher training is viewed as a developmental process, focussing on transition from the concrete operational to the formal operational stage of cognitive functioning, the most essential aspects of preactive teaching skills would appear to be ability to generate alternatives, ability to select among alternatives, and ability to adapt or alter existing circumstances (such as instructional materials). The types of alternatives with which teachers would be trained to deal include: diagnosis, grouping, learning outcomes, instructional resources, instructional procedures, classroom arrangements, acquiring feedback, and providing feedback. Three general objectives that might lead to development of the three basic preactive skills have been stated. Twenty-five specific behavioral objectives related to these general objectives have also been suggested.

Developing Training Materials

If the preactive teaching skills identified in the foregoing section were accepted as legitimate goals for teacher training, then certain training materials would be required to implement these goals. Three types of materials would be essential in a training program designed for developmental growth in cognitive functioning. These would be:

1. materials providing background information on new instructional alternatives
2. materials providing simulated data on the "givens" affecting instructional decisions
3. materials providing peer interaction regarding contradictory instructional decisions.

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The relationship between the previously identified teaching skills and these three types of training materials will be explored briefly here, with the hope that this can provide some preliminary guidelines for the evaluation, refinement, and development of materials for training in preactive teaching skills.

Materials Providing Background Information

In a competency-based teacher education program where competencies are stated in terms of ability to generate alternatives, the teacher trainees will have a great deal of incentive to learn about a variety of instructional programs, instructional tools, instructional strategies, etc. This kind of background information can be provided in a variety of ways.

The more traditional forms of curriculum materials such as textbooks, lectures, and class discussions could be utilized here. Directed observation in selected classroom settings or directed study of existing instructional materials for children could also be useful.

Some of the teacher training materials currently under development might provide guidelines as to appropriate formats for new materials in this category. For example, the Information Units being produced at the Far West Laboratory should be effective in acquainting teachers with new alternatives in the area of instructional resources. In addition, the format used in the Information Units might well provide a prototype for development of materials providing information on alternatives in the areas of diagnostic procedures and means of acquiring feedback from children after a lesson.

The protocol materials being developed in various institutions, including the Far West Laboratory, should be effective in providing information on alternative instructional procedures and alternative means for acquiring feedback from children or providing feedback to children during a lesson.

The numerous materials already developed for training teachers to state specific behavioral objectives and identify criterion measures could form the basis

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for new materials designed to provide information on possible alternative objectives and alternative means of providing feedback to children after a lesson.

A primary characteristic of all materials developed in this category would be that the information be provided in an objective fashion. Since the intent would be to increase the number of visible alternatives, a material providing information on one alternative should not do so at the expense of other alternatives. A book or film presenting a particular instructional strategy in a propagandistic fashion, for example, might tend to open up one new alternative and close off one or more old or familiar alternatives. This would not be a desirable result.

Materials Providing Simulated Data

In a teacher training program where the skills to be attained are stated in terms of certain "givens," it will be expedient, if not necessary, to provide training materials where the givens can be controlled in some fashion, at least in the initial stages of training. The most obvious method of achieving this is to use simulated materials.

Many of the simulated materials which have already been developed focus on skills in interactive decision-making, as for example Cruickshank's Inner-City Simulation Laboratory, published by Science Research Associates, and Paul Twelker's Classroom Management Simulation System, distributed by Oregon's Teaching Research Division. What would be needed would be materials which focus more on the preactive decision-making process, but the general format used need not vary too greatly.

Teacher trainees would be given controlled or selected information about a child or a group of children, and asked to make a preactive instructional decision on the basis of that information. The generation of alternative decisions could be handled in various ways.

One way would be to have individual teachers make decisions independently, and then pool their ideas in group discussion, providing each individual with additional ideas on possible alternatives. This method would be similar to that used in the Cruickshank materials.

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Another way would be to use a programmed format. Individual teachers would make decisions independently and would then be presented with prepared materials providing information on several alternative solutions to the same problem. This method would be similar to that used by Twelker, except that several possible answers would be provided instead of just one.

A third way would be to use the individual teacher's independent decisions as a diagnostic tool. The teacher would be asked to provide several different decisions in response to the same set of givens. These responses would be studied to determine what alternatives the teacher was already aware of, and an instructional program could then be designed to provide the teacher with information on other alternatives that were unfamiliar to him.

Simulated materials would also be useful for training in the area of adapting or altering existing circumstances. Paul Twelker's Discovery Teaching Game would be an example of an existing material which serves this purpose to some extent. Many of the problems used as exercises in this game have to do with altering the attitudes of other teachers, or of parents and children, toward the discovery process.

A critical characteristic of all materials developed in this category would be that the simulated data provided as the "givens" for any particular problem be structured to encourage divergent responses. For example, if the problem is to generate learning outcomes in mathematics for a group of fifth grade children, the information provided on their current concept attainment in that area should be designed to make several different instructional objectives seem appropriate as the next step.

Materials Providing Peer Interaction

In a teacher training program organized around a developmental theme, the provision of repeated confrontations with contradictory viewpoints (a continuing series of cognitive dissonances) will be an important factor. Training materials that emphasize peer interaction and discussion of instructional decisions can help

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The emphasis on peer interaction is a vital one. Traditionally teacher trainees have been presented with viewpoints contradictory to their own, but these contradictory viewpoints have usually emanated from authorities (university professors, school principals, nationally known educators, textbook writers, etc.) rather than from their peers. There are two disadvantages to this process. One, the authorities can be easily discounted if the contradictions are disturbing, because "none of the authorities know what it's like in the real world of the classroom." Two, if the authority's viewpoint is really accepted, this does not contribute much to the cognitive development of the individual teacher, because he is not thinking for himself or reexamining his own value system. The new viewpoint so readily accepted will be as readily discarded when the next authority presents another new viewpoint. Contradictions from authorities are not particularly useful in the process of cognitive development, for these reasons. Contradictions from peers can thus contribute to cognitive development in a unique way.

Most of the available materials for teacher education which utilize peer interaction are designed to develop particular attitudes or values at the same time that they impart particular instructional skills. The Northwest Laboratory materials on Facilitating Inquiry in the Classroom, Development of Higher Level Thinking Abilities, and Interpersonal Communication are cases in point. The Human Relations Training Unit, developed by the Far West Laboratory, and distributed by the Anti-Defamation League might provide a better prototype for a format for materials in this category area, but obviously this material is also designed to develop attitudes of a particular type.

It is undoubtedly impossible to develop value-free materials for teacher training, but it would seem to be important to develop some that allow the teacher some freedom to explore his own values in relation to the values of his peers without the imposition of an external (authority-sanctioned) viewpoint that is beyond control.

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To facilitate the operation of a teacher education program designed for the developmental growth in the cognitive functioning of teachers, some new training materials would need to be developed. Three types of materials have been identified here, as well as some evaluatory criteria for evaluations of materials.

Materials providing background information on new instructional alternatives would need to provide information in a very objective fashion. Materials providing simulated data on the classes attending instructional decisions would need to be structured to encourage divergent responses. Materials providing peer interaction regarding controversy instructional decisions would need to stimulate the legitimization of authority-maintained viewpoints. The instructional module appendix to this paper is a preliminary attempt at satisfying some of these criteria.

Conclusion

This paper has approached the task of defining basic teaching skills by attempting to identify essential prescriptive skills. Piaget's model of cognitive development was used to determine the general goal of teacher training in prescriptive skills, to identify the three basic kinds of prescriptive skills necessary for teachers to learn, and to suggest the kinds of instructional processes that might be used to achieve this goal.

The general goal of teacher training in prescriptive skills, as determined on the basis of Piaget's theory, would be to change the cognitive functioning of teachers so that they begin to move from the concrete operational level of development toward the formal operational level in their prescriptive teaching behavior. The three basic kinds of prescriptive skills identified were skills in generating alternatives, skills in selecting among alternatives, and skills in altering existing circumstances. Specific instructional objectives pursuant to each of these skills were presented. The instructional processes suggested to achieve these goals would capitalize on the developmental processes of assimilation and equilibration. The types of [illegible]